

In re Patent Application of:
CLARKE ET AL.
Serial No. 10/777,959
Filing Date: FEBRUARY 12, 2004

In the Claims:

This listing of claims replaces all prior versions and listing of claims in the application.

1. (Currently Amended) A communications system comprising:

a plurality of data storage devices storing data based upon at least one of a plurality of different operating protocols;

a plurality of mobile wireless communications devices each accessing said data storage devices based upon at least one of the plurality of different operating protocols; and

a protocol interface device comprising

a front-end proxy module communicating with said plurality of mobile wireless communications devices based upon respective operating protocols,

a protocol engine module communicating with said front-end proxy module, ~~based upon a Web-based distributed authoring and versioning (WebDAV) common interface protocol, and~~

a respective interface connector module translating communications between said protocol engine module and said plurality of data storage devices for each of the different operating protocols, and

a data store for storing supported operating protocols for each of said data storage devices and protocol capability ranking metrics for the operating protocols based upon a number of supported protocol features,

said protocol engine module cooperating with
said data store for selecting a supported operating
protocol for accessing each of said data storage
devices based upon the protocol capability ranking
metrics.

2. (Original) The communications system of Claim 1 wherein said protocol engine module comprises a universal proxy servlet module.

3. (Original) The communications system of Claim 2 wherein said protocol interface device further comprises a plurality of provider modules coupled between said universal proxy servlet module and said plurality of interface connector modules; and wherein said universal proxy servlet module generates calls for said plurality of interface connector modules based upon respective data access requests from said front-end proxy module, and wherein said plurality of provider modules transfer the calls to respective interface connector modules.

4. (Previously presented) The communications system of Claim 1 wherein said interface connector modules comprise a Post Office Protocol (POP) connector module and an Internet Message Access Protocol (IMAP) connector module.

5. (Original) The communications system of Claim 1 wherein said plurality of data storage devices, said plurality of mobile wireless communications devices, and said protocol interface device process electronic mail (e-mail) messages.

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6. (Cancelled).

7. (Original) The communications system of Claim 1 wherein said protocol interface device generates an error responsive to at least one non-supported operating protocol.

8. (Original) The communications system of Claim 1 further comprising a wide area network (WAN) connecting at least one of said mobile wireless communications devices with said protocol interface device.

9. (Original) The communications system of Claim 1 further comprising a wide area network (WAN) connecting at least one of said data storage devices with said protocol interface device.

10. (Currently Amended) A protocol interface device for interfacing a plurality of mobile wireless communications devices with a plurality of data storage devices, the mobile wireless communications devices and the data storage devices each using at least one of a plurality of different operating protocols, the protocol interface device comprising:

a front-end proxy module for communicating with the plurality of mobile wireless communications devices using respective operating protocols;

a protocol engine module communicating with the front-end proxy module, ~~using a Web-based distributed authoring and versioning (WebDAV) common interface protocol,~~ and

a respective interface connector module for translating communications between said protocol

engine module and the plurality of data storage devices for each of the different operating protocols, and

a data store for storing supported operating protocols for each of said data storage devices and protocol capability ranking metrics for the operating protocols based upon a number of supported protocol features,

said protocol engine module cooperating with said data store for selecting a supported operating protocol for accessing each of said data storage devices based upon the protocol capability ranking metrics.

11. (Original) The protocol interface device of Claim 10 wherein said protocol engine module comprises a universal proxy servlet module.

12. (Original) The protocol interface device of Claim 11 further comprising a plurality of provider modules coupled between said universal proxy servlet module and said plurality of interface connector modules; and wherein said universal proxy servlet module generates calls for said plurality of interface connector modules based upon respective data access requests from said front-end proxy module, and wherein said plurality of provider modules transfer the calls to respective interface connector modules.

13. (Original) The protocol interface device of Claim 10 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, and the

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protocol interface device process electronic mail (e-mail) messages.

14. (Cancelled).

15. (Currently Amended) A protocol interface device for interfacing a plurality of communications devices with a plurality of data storage devices, the communications devices and the data storage devices each using at least one of a plurality of different operating protocols, the protocol interface device comprising:

a front-end proxy module for communicating with the plurality of communications devices using respective operating protocols;

a protocol engine module communicating with the front-end proxy module, ~~using a Web-based distributed authoring and versioning (WebDAV) common interface protocol,~~ and

a respective interface connector module for translating communications between said protocol engine module and the plurality of data storage devices for each of the different operating protocols, and

a data store for storing supported operating protocols for each of said data storage devices and protocol capability ranking metrics for the operating protocols based upon a number of supported protocol features,

said protocol engine module cooperating with said data store for selecting a supported operating protocol for accessing each of said data storage

devices based upon the protocol capability ranking metrics.

16. (Original) The protocol interface device of Claim 15 wherein said protocol engine module comprises a universal proxy servlet module.

17. (Original) The protocol interface device of Claim 16 further comprising a plurality of provider modules coupled between said universal proxy servlet module and said plurality of interface connector modules; and wherein said universal proxy servlet module generates calls for said plurality of interface connector modules based upon respective data access requests from said front-end proxy module, and wherein said plurality of provider modules transfer the calls to respective interface connector modules.

18. (Original) The protocol interface device of Claim 15 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, and the protocol interface device process electronic mail (e-mail) messages.

19. (Cancelled).

20. (Currently Amended) A method for interfacing a plurality of mobile wireless communications devices with a plurality of data storage devices, the mobile wireless communications devices and the data storage devices each using at least one of a plurality of different operating protocols, the method comprising:

providing a front-end proxy module for communicating with the plurality of mobile wireless communications devices using respective operating protocols;

providing a protocol engine module communicating with the front-end proxy module; ~~using a Web-based distributed authoring and versioning (WebDAV) common interface protocol;~~
and

providing a respective interface connector module for translating communications between the protocol engine module and the plurality of data storage devices for each of the different operating protocols; and

providing a data store for storing supported operating protocols for each of said data storage devices and protocol capability ranking metrics for the operating protocols based upon a number of supported protocol features;

the protocol engine module cooperating with the data store for selecting a supported operating protocol for accessing each of said data storage devices based upon the protocol capability ranking metrics.

21. (Original) The method of Claim 20 wherein the protocol engine module comprises a universal proxy servlet module.

22. (Original) The method of Claim 21 further comprising a plurality of provider modules coupled between the universal proxy servlet module and the plurality of interface connector modules; and wherein the universal proxy servlet module generates calls for the plurality of interface connector modules based upon respective data access requests from the front-end proxy module, and wherein the plurality of

provider modules transfer the calls to respective interface connector modules.

23. (Original) The method of Claim 20 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, and the protocol interface device process electronic mail (e-mail) messages.

24. (Cancelled).

25. (Currently Amended) A computer-readable medium having computer executable modules for interfacing a plurality of mobile wireless communications devices with a plurality of data storage devices, the mobile wireless communications devices and the data storage devices each using at least one of a plurality of different operating protocols, the computer-readable medium comprising:

a front-end proxy module for communicating with the plurality of mobile wireless communications devices using respective operating protocols;

a protocol engine module communicating with the front-end proxy module; ~~using a Web based distributed authoring and versioning (WebDAV) common interface protocol;~~
and

a respective interface connector module for translating communications between the protocol engine module and the plurality of data storage devices for each of the different operating protocols; and

a data store module for storing supported operating protocols for each of the data storage devices and protocol

capability ranking metrics for the operating protocols based upon a number of supported protocol features;
said protocol engine module cooperating with said data store module for selecting a supported operating protocol for accessing each of the data storage devices based upon the protocol capability ranking metrics.

26. (Original) The computer-readable medium of Claim 25 wherein the protocol engine module comprises a universal proxy servlet module.

27. (Original) The computer-readable medium of Claim 26 further comprising a plurality of provider modules coupled between the universal proxy servlet module and the plurality of interface connector modules; and wherein the universal proxy servlet module generates calls for the plurality of interface connector modules based upon respective data access requests from the front-end proxy module, and wherein the plurality of provider modules transfer the calls to respective interface connector modules.

28. (Original) The computer-readable medium of Claim 25 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, and the protocol interface device process electronic mail (e-mail) messages.

29. (Cancelled).